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| 10/584,460 | 06/22/2006 | Toshiyuki Zento | 1011350-000375 | 3318 |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary

Application No.

10/584,460

Applicant(s)

ZENTO ET AL.

Examiner

DANIEL MCNALLY

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date 6/22/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-10 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the connected part" in lines 8-9. There is insufficient antecedent basis for this limitation in the claim. It is unclear if "the connected part" is referring to a part of tube (a), a part of tube (b) or both tubes. Line 8 appears to only require applying the absorbent to part of tube (a) or tube (b); however line 9 appears to require applying absorbent to the part of tube (a) and tube (b). It is also unclear what part of the tubes are connected because the tubes have not been yet connected in a connecting step, it appears at the time of interposing the absorbent that the tubes are not yet connected and the absorbent is applied to the parts of the tube or tubes to be connected. It is recommended clarifying if the absorbent is applied to one or both of the tubes, and clarifying if the absorbent is applied to the tubes to be connected or the tubes after they are already connected.

Claim 1 recites the limitation "the outside diameter of a thin tube" and "the inside diameter of a thick tube" in lines 10-11. There is insufficient antecedent basis for this limitation in the claim. It is recommended amending the claim to recite --an outside diameter of a thin tube-- and --an inside diameter of a thick tube--.

Claim 1 is unclear because no relationship between tube (a) and tube (b) with a thin tube and a thick tube are provided. It is unclear if tube (a) is considered a thin or thick tube and it is unclear if tube (b) is considered a thin or thick tube. The ratio of the diameters of the thin and thick tubes does not further limit the method of assembling tube (a) and tube (b)

Claim 1 recites the limitation "the connected part " in line 15. There is insufficient antecedent basis for this limitation in the claim. It is recommended adding to "a step of connecting... ..by mutual insertion, --to form a connected part,-- and"

Claims 2-10 depend from claim 1 and are rejected for the same reasons expressed above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 3-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Savitski et al. (US2002/0100540, herein "Savitski") in view of Ruotsalainen (US2002/0179233, herein "Ruotsalainen") and Tazaki et al. (US5260394, herein "Tazaki").

Savitski discloses a method of joining tubes. The method comprises providing a first tube (42) and a second tube (40), wherein the tubes comprise laser transmitting thermoplastic materials such as polystyrenes and polyolefins, an absorbent material

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(44) is provided between the tubes as shown in Figures 3, 4, 6, and 7, the absorbent material comprises carbon black which is the same material used in the applicant's invention and carbon black intrinsically can absorb wavelengths of 700-2500nm, the tubes are connected as shown in the Figures, a laser beam is irradiated onto the absorbent material to form a bond between the tubes (paragraph 0059, 0061). Savitski is silent as to any relationship of the diameters of the tubes. While Savitski discloses the tubes can be formed materials such as polyolefin and polystyrene, Savitski is silent as to forming a tube that comprises both polyolefin and polystyrene. It is inherent a tube made of polyolefin as suggested by Savitski would have a storage elastic modulus in the range of 2×10^7 - 9×10^8 Pa because the material disclosed by Savitski is the same as the claimed material.

Ruotsalainen discloses a method of transmission laser welding. The method comprises fitting two plastic parts together, wherein the parts maybe a tubular shell and an insert that can be partially inserted into the tubular shell, the shell and insert are assembled together with an interference fit, wherein the interference fit keeps the shell and insert together without a holding or clamping means, the interference fit is a result of the insert having an outside diameter that is superior to the inner diameter of the shell, laser is irradiated onto the interface between the shell and insert to form a bond (paragraphs 0008-0011, 0013, 0016 and 0020). It is within the skill of one of ordinary skill in the art to ensure while forming the interference fit that the outside diameter of the insert is not so large that it no longer fits within the inside diameter of the shell. One of ordinary skill in the art would have readily appreciated selecting a shell and insert with

an interference fit so that the ratio (outside diameter of insert/ inside diameter of shell) is an optimized value to ensure there is an interference fit (ratio greater than 1) but not so large that the parts do not fit together (ratio less than 1.25) as the optimized ratio would have been found using normal experimentation by one of ordinary skill.

Tazaki discloses a method of improving styrene polymer. Tazaki discloses polystyrene is used in molding operations to form articles with heat and chemical resistance, and polyolefin is used in molding operations to form articles with flexibility. Tazaki suggest forming a copolymer of styrene and olefin to form a material that is flexible and has strong heat and chemical resistance (column 1, lines 14-68). It is inherent a tube made of polyolefin and polystyrene as suggested by Tazaki would have a storage elastic modulus in the range of $1.0 \times 10^7 - 6.7 \times 10^8$ Pa because the material disclosed by Tazaki is the same as the claimed material.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of Savitski by fitting the inside diameter of the outer tube and the outer diameter of the inner tube with an interference fit as taught by Ruotsalainen in order to hold the tubes together without a holding means and to apply annular pressure to the interface without applying a clamping means, and to modify the method of Savitski by forming one of the tubes with a copolymer of styrene and olefin as taught by Tazaki in order to give the tube flexibility with added heat and chemical resistance.

With regard to claim 3, Savitski discloses the tube material should be sufficiently clear to afford visual inspection of the underlying bond (paragraph 0059). Having a haze value that is less than 40% is intrinsic of the materials used to form the tubes.

With regard to claim 4, Tazaki discloses the styrene component is present from 0.1-99.9 percent by weight (column 4, lines 45-60).

With regard to claim 5, Savitski discloses the tube can be 100% polyolefin.

With regard to claims 6-8, Tazaki discloses the styrene comprises an aromatic vinyl polymer block and a conjugated diene polymer block, wherein the aromatic vinyl polymer block is polystyrene and the conjugated diene type polymer block comprises polyisoprene or polybutadiene.

With regard to claim 9, Savitski discloses the polyolefin may comprise polypropylene or polyethylene resin.

With regard to claim 10, Savitski discloses the absorbent is carbon black.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Savitski, Ruotsalainen, Tazaki and further in view of Woo et al. (US5356709, herein "Woo").

Savitski as modified discloses a method of joining tubes. Applicant is referred to paragraph 4 for a detailed discussion of Savitski as modified. Savitski discloses using a monolayer tubular body and is silent as to using a tube having multilayer construction.

Woo discloses a material for making medical grade tubes. The tube comprises an outer layer comprising a blend of polypropylene copolymer and styrene-ethylene-butylene-styrene copolymer, a tie layer, and a core layer comprising a blend of polyamide and ethylene-vinyl acetate (column 1, line 39 - column 2, line 20). The use of

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a multilayer construction for the tube allows the tube to be sufficiently flexible, translucent, and able to bond to a polyolefin surface.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of Savitski by forming a tube of multilayer construction as taught by Woo in order to provide desired characteristics such as flexibility to the tubing while ensuring the tubing can be bonded to a polyolefin surface.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL MCNALLY whose telephone number is (571)272-2685. The examiner can normally be reached on Monday - Friday 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel McNally/
Examiner, Art Unit 1791

/John L. Goff/
Primary Examiner, Art Unit 1791

/DPM/
July 24, 2008